



Mechanics and Machines, HW CAE STR 2

Unsteady Heat Transfer Problem

Short Task Description



Description: Solve the non-stationary heat transfer equation using 3 methods:

1. Finite Difference Method
2. Finite Element Method
3. NX simulation

Research Object: Rectangular plate of size 7*6 cm. The initial value of the plate temperature is 10°.

Boundary conditions:

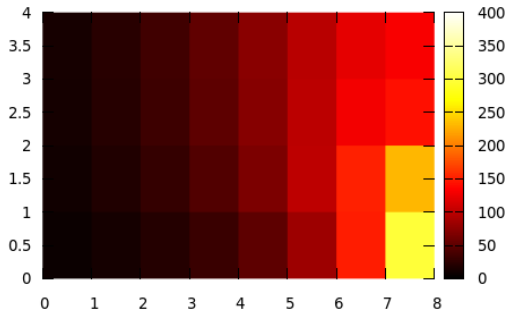
- the lower half of the left boundary is heat isolated (0 degrees)
- 20 degrees is maintained on the lower (south) boundary
- the rest of the boundary temperature is 800 degrees

Simulation time: 10 sec

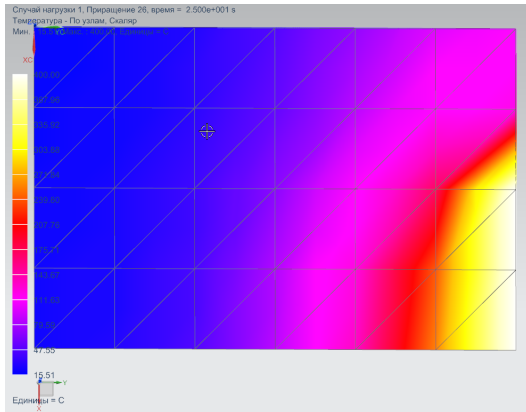
Artifacts:

- Zip archive with NX detail files (.prt) and simulation (.sim)
- Code, which can be executed anywhere
- 1-3 pages report in (.pdf). You should compare results from all 3 methods. It should contain formulas, explanation, considered assumptions and results.

Result example



FDM result by coding



NX sim result

Deserve "A" grade!

– Oleg Bulichev

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📍 @Lupasic

🏢 Room 105 (Underground robotics lab)